

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2001-128194

(43)Date of publication of application : 11.05.2001

(51)Int.Cl.

H04N 13/00

(21)Application number : 11-301139

(71)Applicant : CANON INC

(22)Date of filing : 22.10.1999

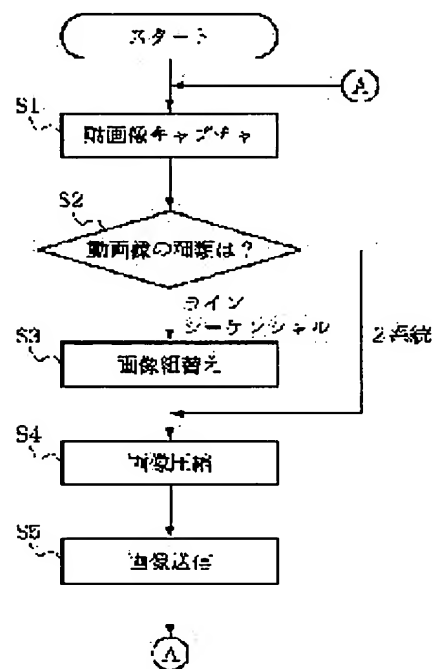
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(54) STEREOSCOPIC VIDEO PROCESSOR, METHOD FOR PROCESSING STEREOSCOPIC VIDEO AND STORING MEDIUM

(57)Abstract:

PROBLEM TO BE SOLVED: To solve the problem involved in distribution of stereoscopic video through a network that some terminals can not cope with the distributed stereoscopic videos when the distributed videos have formats to which the terminals are not adaptive, nor the some terminals can cope with data having formats not suitable to the terminals when the data are inputted from a plurality of kinds of cameras having different formats of stereoscopic videos.

SOLUTION: A stereoscopic video processor inputs stereoscopic video data and outputs the data to a network after converting the format of the data into a format which is suitable for output.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

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CLAIMS

[Claim(s)]

[Claim 1] The 3-dimensional scenography processor characterized by having an input means to input 3-dimensional scenography data, a conversion means to transform into the format suitable for the output to a network the format of said 3-dimensional scenography data which said input means inputted, and an output means to output said 3-dimensional scenography data changed by said conversion means.

[Claim 2] Said 3-dimensional scenography data are a 3-dimensional scenography processor according to claim 1 characterized by being Rhine sequential format data.

[Claim 3] Furthermore, the 3-dimensional scenography processor according to claim 1 to 2 characterized by having a compression means to compress said 3-dimensional scenography data changed by said conversion means.

[Claim 4] Furthermore, it is the 3-dimensional scenography processor according to claim 1 to 3 which has a distinction means to distinguish the format of said 3-dimensional scenography data which said input means inputted, and is characterized by said conversion means changing the format of said solid image data according to distinction of said distinction means.

[Claim 5] Said conversion means is a 3-dimensional scenography processor according to claim 1 to 4 characterized by dividing the field of one screen into two continuous fields, and changing into the format which assigns the image for left eyes to one field to another [the object for left eyes, and] field.

[Claim 6] Said conversion means is a 3-dimensional scenography processor according to claim 5 characterized by changing the format of said 3-dimensional scenography data into top-down split-screen format.

[Claim 7] Said conversion means is a 3-dimensional scenography processor according to claim 5 characterized by changing the format of said 3-dimensional scenography data into side-by-side split-screen format.

[Claim 8] The 3-dimensional scenography art characterized by having the input process which inputs 3-dimensional scenography data, the conversion process which transforms into the format suitable for the output to a network the format of said 3-dimensional scenography data inputted at said input process, and the output process which outputs said 3-dimensional scenography data changed according to said conversion process.

[Claim 9] Said 3-dimensional scenography data are a 3-dimensional scenography art according to claim 8 characterized by being Rhine sequential format data.

[Claim 10] Furthermore, the 3-dimensional scenography art according to claim 8 to 9 characterized by having the pressing operation which compresses said 3-dimensional scenography data changed according to said conversion process.

[Claim 11] Furthermore, it is the 3-dimensional scenography art according to claim 8 to 10 which has the distinction process which distinguishes the format of said 3-dimensional scenography data inputted at said input process, and is characterized by said conversion process changing the format of said solid image data according to distinction of said distinction process.

[Claim 12] Said conversion process is a 3-dimensional scenography art according to claim 8 to 11 characterized by dividing the field of one screen into two continuous fields, and changing into the format which assigns the image for left eyes to one field to another [the object for left eyes, and] field.

[Claim 13] Said conversion process is a 3-dimensional scenography art according to claim 12 characterized by changing the format of said 3-dimensional scenography data into top-downsplit-screen format.

[Claim 14] Said conversion process is a 3-dimensional scenography art according to claim 12 characterized by changing the format of said 3-dimensional scenography data into side-by-side split-screen format.

[Claim 15] In the storage which memorizes the program to which a computer processes 3-dimensional

scenography data by reading and performing The input process which inputs plural-type 3-dimensional scenography data, and the input process which inputs 3-dimensional scenography data, The storage which memorizes the program as which the conversion process which transforms into the format suitable for the output to a network the format of said 3-dimensional scenography data inputted at said input process, and the output process which outputs to a network said 3-dimensional scenography data changed according to said conversion process are operated.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the 3-dimensional scenography processor, 3-dimensional scenography art, and storage which process 3-dimensional scenography for playback, transmission, etc.

[0002]

[Description of the Prior Art] In the photography system which can carry out the capture of the video signal acquired with a video camera on real time, the image by which the capture was carried out is sent to a remote place through a network. WebView (Canon) is known as what controls the transmitting rate of video signal data by the transmitting side in that case.

[0003] In this system, using not an ordinary video camera but a 3-dimensional scenography camera, a 3-dimensional scenography processor can be built into an input device, a solid graphic display device is built into an output device, and it is possible through a network to distribute 3-dimensional scenography. The image distributed can distribute the image force and whose presence improved more by changing from the conventional two-dimensional image to a 3D scenography.

[0004]

[Problem(s) to be Solved by the Invention] The 3D scenography which the 3-dimensional scenography processor of this system incorporates was a stereo image which connected the image from two cameras up and down, and compounded it.

[0005] However, 3D video currently sold in the world has a common Rhine sequential image, and there are many in which the 3D camera currently sold in the world also has the output of a Rhine sequential image.

[0006] thus, the situation that two or more kinds of formats of a solid image exist -- a network -- Rhine -- since the 3-dimensional scenography distributed depending on a terminal is the format which the end of a local does not support when sequential 3-dimensional scenography is distributed, possibility that it becomes impossible to process can be considered. because, above WebView -- like -- the format of 3-dimensional scenography -- Rhine -- it is because the equipment which is a format which is different in it being sequential also exists.

[0007] Moreover, since two or more kinds of cameras with which formats of 3-dimensional scenography differ exist similarly, also when the format of the 3-dimensional scenography which a camera outputs, and the format of 3-dimensional scenography that a 3-dimensional scenography processor corresponds do not correspond, possibility that it becomes impossible to process data can be considered.

[0008] This invention aims at offering the 3-dimensional scenography processor, 3-dimensional scenography art, and storage which can change two or more kinds of solid images inputted in order to solve the above-mentioned technical problem.

[0009]

[Means for Solving the Problem] In view of the above-mentioned technical problem, the 3-dimensional scenography processor, 3-dimensional scenography art, and storage of this invention are characterized by transforming into the format suitable for the output to a network the format of the 3-dimensional scenography data which inputted and inputted 3-dimensional scenography data, and outputting the changed 3-dimensional scenography data.

[0010]

[Embodiment of the Invention] Hereafter, the operation gestalt which starts this invention according to an accompanying drawing is explained to a detail.

[0011] The fundamental configuration of this 3-dimensional scenography processor 1 is shown in drawing 6. This 3-dimensional-scenography processor 1 consists of NetworkI/F16 which outputs to a network the memory 15 which once stores the program read from HDD (hard disk drive)13 and I/O which memorize CPU12 which manages control of this whole equipment, various kinds of programs, data, etc., and the image data and HDD13 from the 3-dimensional scenography camera 6, and the 3-dimensional-scenography data which changed with the 3-dimensional-scenography processor 1, and FDD(floppy disk drive)17 grade which exchanges data with a floppy disk.

[0012] He is trying to supply the programmer as which 3-dimensional scenography processing is operated with this 3-dimensional scenography processor by media, such as a floppy disk, in this example.

[0013] The floppy disk containing a program supplies a program to HDD or memory through FDD.

[0014] The 3-dimensional scenography data inputted from the 3-dimensional scenography camera 6 are stored in memory 15, and processing of a floppy disk 18, formal conversion which is explained below by control of CPU12 according to the program read from HDD13 is performed.

[0015] Drawing 1 is drawing which expressed roughly the flow of 3-dimensional scenography processing of this 3-dimensional scenography processor. This 3-dimensional scenography processor consists of the dynamic-image input section 2, the image processing section 3, the picture compression section 4, and the data output section 5.

[0016] The Rhine sequential dynamic image 7 is inputted into the dynamic-image input section 3 as 3-dimensional scenography data from the 3-dimensional scenography camera 6. The inputted Rhine sequential dynamic image 7 is processed in the following image processing section 3.

[0017] Drawing 2 expressed the situation. The image processing section 4 performs this processing. If the capture of the Rhine sequential dynamic image 7 is carried out, the right-and-left image is constituted at intervals of a line (9 of drawing 2). however, Rhine -- degradation of an image will become quite intense if a sequential image is compressed by JPEG and motion JPEG as it is.

[0018] Usually, since the pixel within the small block of the same image has many similar colors, if the compression approaches, such as JPEG which carries out redundancy compression based on the correlation for every block, are used, degradation of image quality can compress it few.

[0019] Rhine where a different image for every Rhine exists in the same block on the other hand -- since the correlation for every block becomes low when sequential, even if it compresses with the same compressibility -- mutually related low Rhine -- degradation of image quality will be conspicuous for the more sequential one.

[0020] For this reason, the image block of a left eye and a right eye divides, and as a different image does not go into the small block at the time of JPEG compression, since, the direction which performed compression processing can lessen degradation of image quality.

[0021] Rhine of the image located in a line with the left 1, the right 1, the left 2, the right 2, and is reranked with the left 1, the left 2, ..., the right 1 and the right 2, and .. like 10 of drawing 2 like 9 of drawing 2, and finally, like drawing 3, the image 3-dimensional scenography data area for one screen is divided up and down, and is rearranged to two image blocks for -- right eyes for left eyes.

[0022] Although the 3-dimensional scenography data area for one screen is changed into the so-called top-down split-screen format divided up and down in this example, even if it may use side-by-side split-screen format divided into right and left and uses which, degradation of an image can be prevented rather than it compresses the Rhine sequential dynamic image 7 by motion JPEG etc.

[0023] Next, the rearranged image is sent and compressed into the picture compression section 4. In the data output section 5, compression image data is processed by the format suitable for the data sent out to a network, and is sent to a network 8.

[0024] Drawing 4 is drawing showing the outline of the flow of 3-dimensional scenography processing when a dynamic image is inputted from two cameras.

[0025] In this case, since each two images are not divided but the image inputted is constituted for every lump which continued, it is compressible for every screen of that lump. therefore, Rhine -- there is little degradation of image quality compared with compressing a sequential image as it is. Therefore, where an image on either side is connected as it was, data are compressed and it outputs to a network.

[0026] Drawing 5 is a flow chart which shows the procedure of this example.

[0027] The capture of the dynamic image is first carried out at step S1.

[0028] Next, the class of dynamic image is distinguished at step S2. This shall carry out registration which shows what kind of image is beforehand inputted into the 3-dimensional scenography processor, and it shall

judge by reading it.

[0029] this time -- an input dynamic image -- Rhine -- if sequential, it will progress to step S3, and an image as shown by drawing 2 is rearranged. If it is a dynamic image from two cameras, step S3 will be skipped.

[0030] Next, the image for progressing to step S4 and transmitting to a network is compressed, it progresses to step S5, and an image is transmitted. And the processing after step S1 will be repeated.

[0031] As mentioned above, even if two or more kinds of 3-dimensional scenography data are inputted, it is convertible for a format of the 3-dimensional scenography to which a network corresponds.

[0032] Moreover, even if it receives two or more kinds of 3-dimensional scenography data through a network, it is convertible for the format which the display etc. supports.

[0033] in addition -- explanation of this example -- Rhine -- although changed into top-downsplit-screen format from sequential 3-dimensional scenography, it may not restrict to this and you may be a format like side-by-side split-screen format. that is, Rhine -- what is necessary is just to change into the format of the arbitration which can lessen degradation of an image rather than sequential 3-dimensional scenography

[0034] moreover, the format of the 3-dimensional scenography inputted -- Rhine -- it may not restrict sequentially and the format of arbitration is sufficient. And a 3-dimensional scenography processor should just change the format of 3-dimensional scenography data according to the format of the 3-dimensional scenography data inputted, and the format which should be outputted.

[0035] In addition, with the above-mentioned operation gestalt, although the 3-dimensional scenography camera was used as an input device of the 3-dimensional scenography of a 3-dimensional scenography processor, the video of the stereo image beforehand photoed instead of the 3-dimensional scenography camera may be used.

[0036] Moreover, after changing the image data sent from the camera, it explained by the case where it sends out to a network, but even if it is the gestalt which changes two or more kinds of 3-dimensional scenography data sent from a network, and is outputted to a network, it cannot use also until it says.

[0037] Moreover, as the above-mentioned operation gestalt explained, a 3-dimensional scenography processor can set general-purpose information processors of what needs a certain amount of hardware, such as a network interface and a camera, such as a personal computer, as the foundation, and can operate.

[0038] Therefore, it cannot be overemphasized by this invention's supplying the storage which recorded the program code of the software which realizes the function of the operation gestalt mentioned above to a system or equipment, and carrying out read-out activation of the program code with which the computer (or CPU and MPU) of the system or equipment was stored in the storage that it is attained.

[0039] In this case, the function of the operation gestalt which the program code itself read from the storage mentioned above will be realized, and the storage which memorized that program code will constitute this invention.

[0040] As a storage for supplying a program code, a floppy disk, a hard disk, an optical disk, a magneto-optic disk, CD-ROM, CD-R, a magnetic tape, the memory card of a non-volatile, ROM, etc. can be used, for example.

[0041] Moreover, it cannot be overemphasized that the case where the function of the operation gestalt which OS (operating system) **** which is working on a computer performed a part or all of actual processing, and the function of the operation gestalt mentioned above by performing the program code which the computer read is not only realized, but it mentioned above by the processing based on directions of the program code is realized is included.

[0042] Furthermore, after the program code read from a storage is written in the memory with which the functional expansion unit connected to the functional add-in board inserted in the computer or a computer is equipped, it cannot be overemphasized that it is contained also when the function of the operation gestalt which performed a part or all of processing that CPU with which the extension board and functional expansion unit are equipped based on directions of the program code is actual, and mentioned above by the processing is realized.

[0043]

[Effect of the Invention] As explained above, even if there are two or more kinds of formats of the data as 3-dimensional scenography data inputted, according to this invention, they can output in the format which changed 3-dimensional scenography data and was suitable for the network.

[Translation done.]

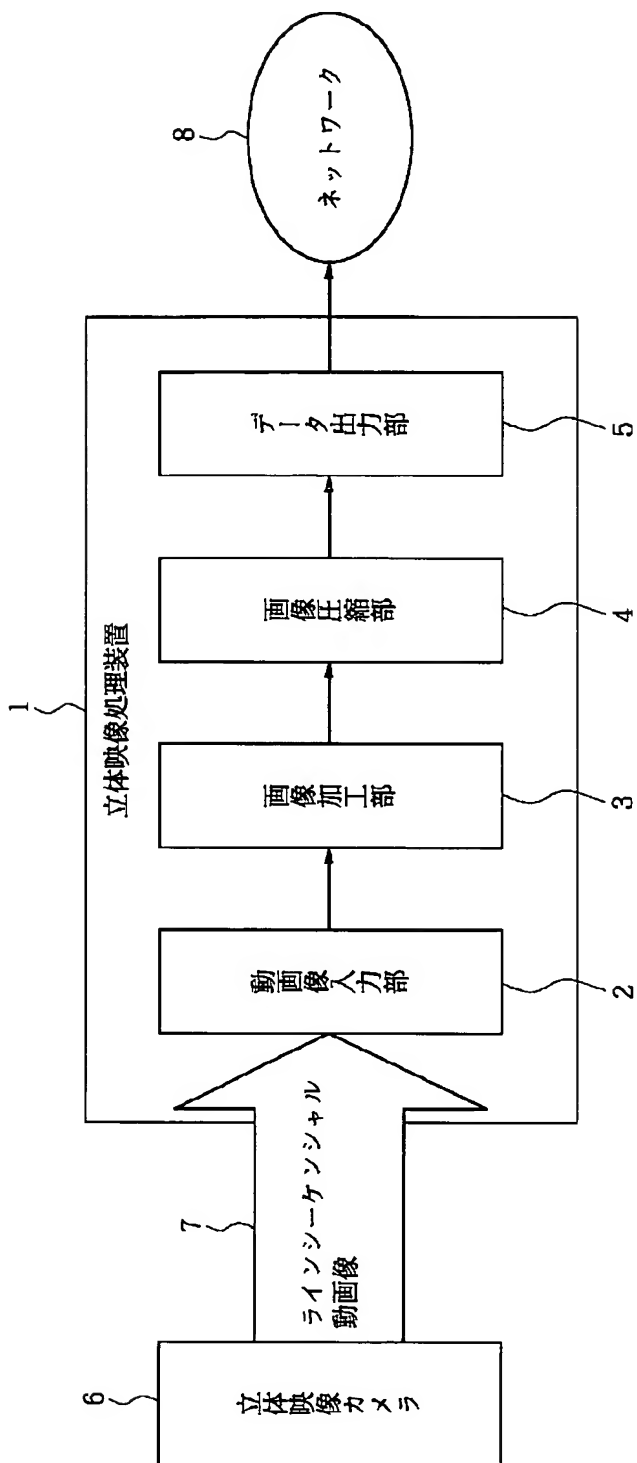
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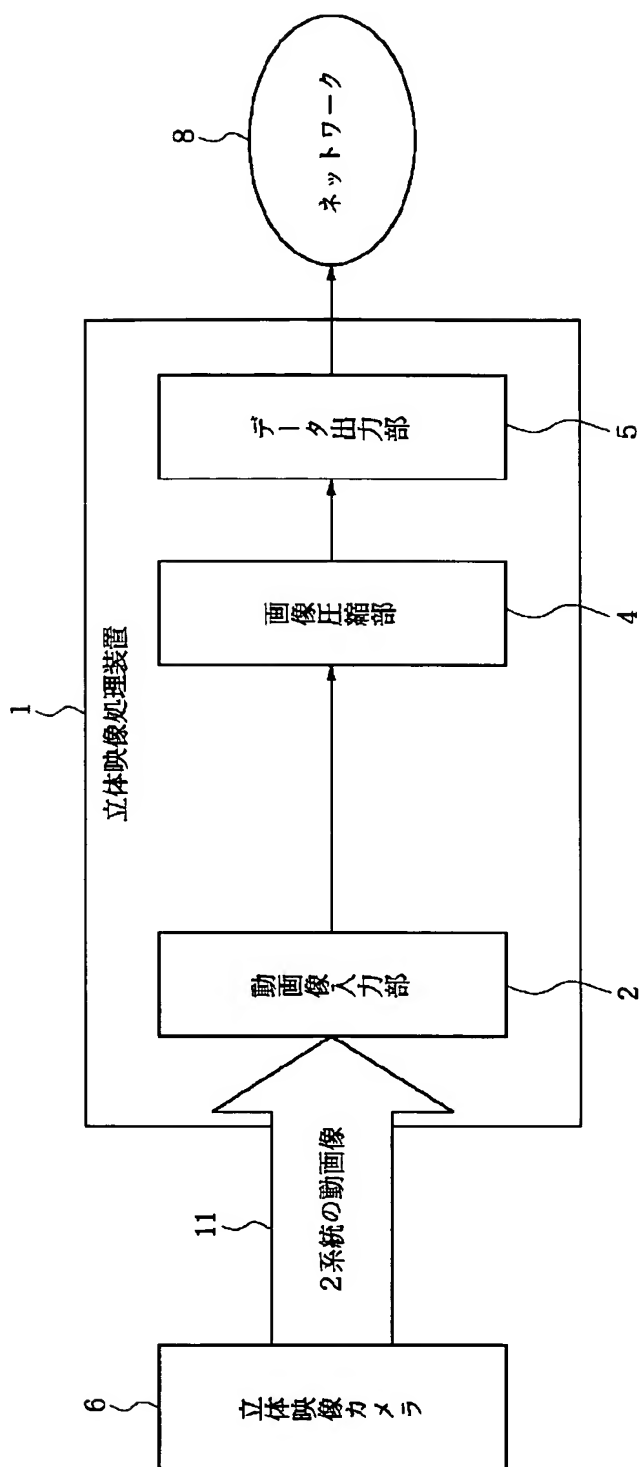
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DRAWINGS

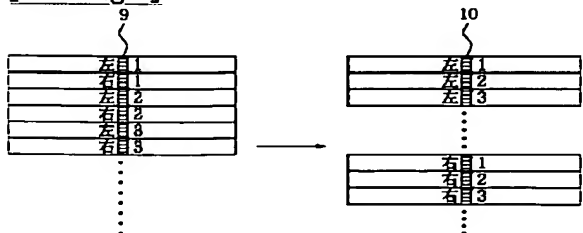
[Drawing 1]



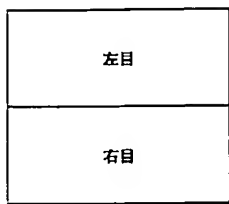
[Drawing 4]



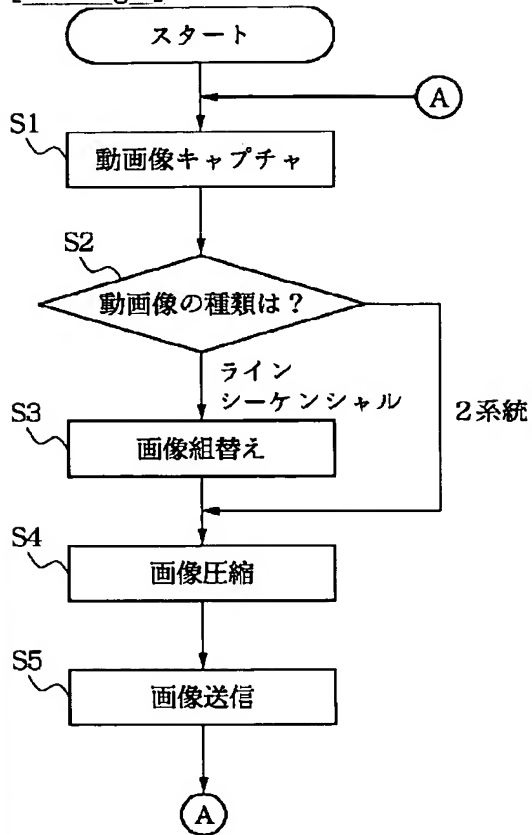
[Drawing 2]



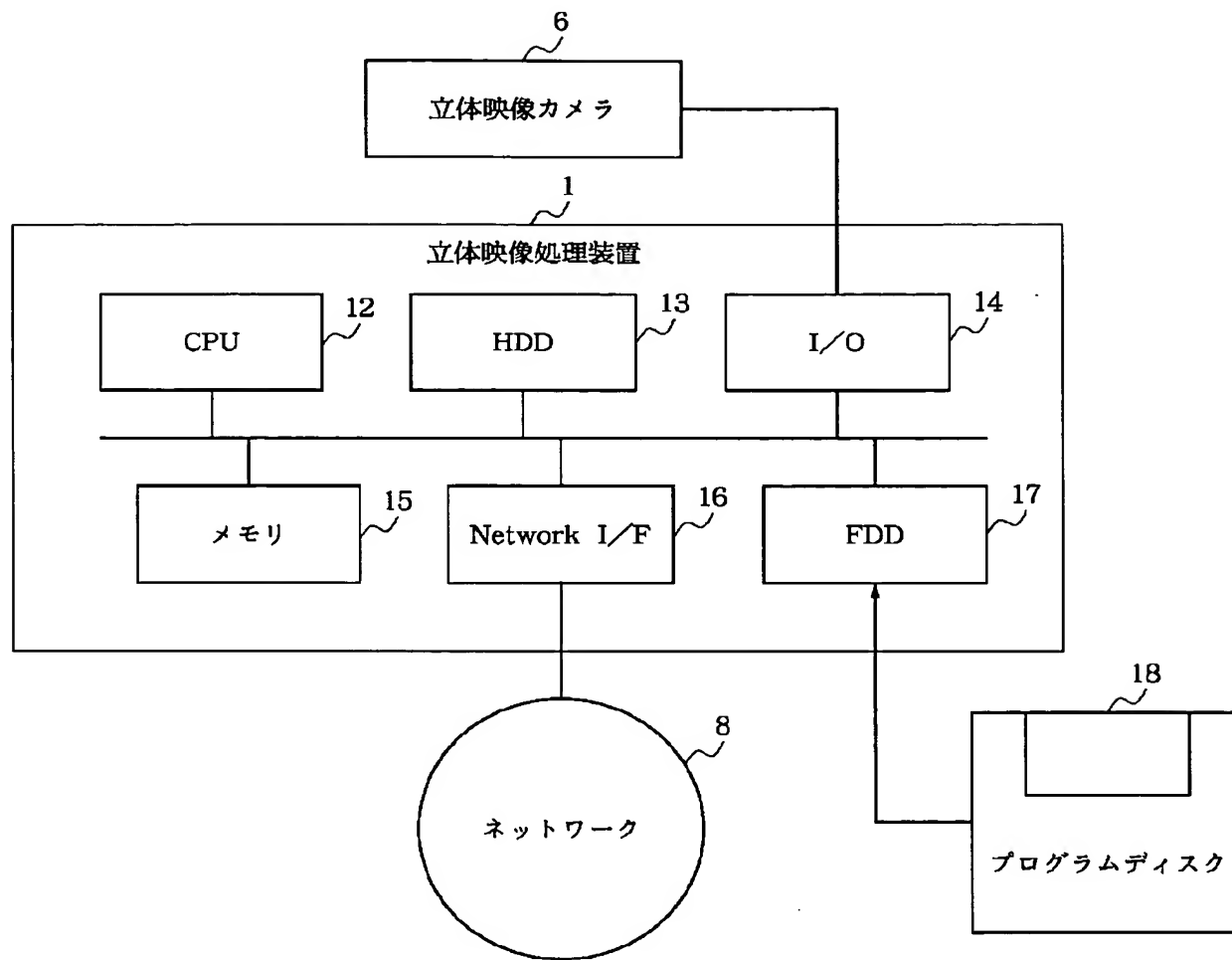
[Drawing 3]



[Drawing 5]



[Drawing 6]



[Translation done.]